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| 10/644,458 | 08/20/2003 | Preston F. Crow | EMC-99-026CON1 | 5940 |
| 24227 | 7590 | 04/18/2006 | EXAMINER | |
| EMC CORPORATION OFFICE OF THE GENERAL COUNSEL 176 SOUTH STREET HOPKINTON, MA 01748 | | | LY, ANH | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2162 | |

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/644,458

Applicant(s)

CROW ET AL.

Examiner

Anh Ly

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2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 3,7-12 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,13,14 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. This Office Action is response to Applicants' Preliminary Amendment filed on 08/20/2003.
2. Claims 3, 7-12 and 15 are cancelled without prejudice or disclaimer.
3. Claims 1-2, 4-6, 13-14 and 16 are pending in this application.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No.: 6,161,111 issued to Mutalik et al. (hereinafter Mutalik).

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With respect to claim 1, Mutalik teaches a memory storage device having an operating system which uses at least one inode for accessing file segments (fig.1, abstract, col. 3, lines 15-40), the inode comprising:

a plurality of rows (fig. 1B, col. 5, lines 66-67 and col. 6, lines 1-46); and
a portion of the rows storing extents pointing to data blocks, each extent having a field to indicate whether the extent is an indirect extent, a hole extent or a direct extent (col. 11, lines 51-67, col. 12, lines 1-49; also see col. 7, lines 10-67 and col. 8, lines 1-28 and col. 10, lines 29-54).

Mutalik does not clearly teach rows and indirect and direct extent. But, however, Mutalik teaches the chunks storing a series of blocks on disk storage device and blocks as identified as extents 9col. 6, lines 1-67); and the current extent offset pointer implied that it is pointing to some extents directly or indirectly 9col. 10, lines 40-54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teachings of Mutalik such as chunks and extent offset pointer so as to have a memory storage device having an operating system, extents and data blocks in the multi-volumes extent based file system environment.

7. Claims 2, 4-6, 13-14 and 16 are is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No.: 6,161,111 issued to Mutalik et al. (hereinafter Mutalik) in view of US Patent No.: 5,764,972 issued to Crouse et al. (hereinafter Crouse).

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With respect to claim 2, Mutalik teaches a memory storage device as discussed in claim 1.

Mutalik does not explicitly indicate, "wherein each I-node is adapted to allow any portion of the extents stored therein to be indirect extents; wherein a portion of the extents are hole extents."

However, Crouse teaches portion of extent array and direct and indirect extent (see figs. 6, 7, 10 and 11; col. 14, lines 12-65).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Mutalik with the teachings of Crouse. One having ordinary skill in the art would have found it motivated to utilize the use of any portion of the extends to be indirect extents as disclosed (Crouse's figs. 6 & 7), into the system of Mutalik for providing a file system for network data servers that is specifically designed to efficiently and reliably control the storage and access of remote files on remote secondary storage system, and can provide for the flexibility to support future developments that will increase the speed and usage of distributed computer network environment (Crouse's col. 4, lines 10-20).

With respect to claim 4, Mutalik teaches each extent further comprises a length field, the length field of each indirect extent indicating the number of data blocks pointed to indirectly by the indirect extent (col. 16, lines 18-22 : the length value of blocks.

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With respect to claim 5, Mutalik teaches a field for indicating that the extent is one of an indirect extent and a direct extent (col. 7, lines 10-67 and col. 8, lines 1-28).

Mutalik does not explicitly indicate, "assigning an I-node to a data file to be stored and writing a plurality of extents in the I-node, each extent pointing to a string of one or more data blocks for storing a segment of the data file."

However, Crouse teaches the I-node and writing a plurality of extent in the I-node and each extent pointing to a string of one or more data blocks as claimed (col. 11, lines 44-67 and col. 12, lines 1-20; col. 13, lines 42-67, col. 17, lines 14-67 and col. 18, lines 1-19).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Mutalik with the teachings of Crouse. One having ordinary skill in the art would have found it motivated to utilize the use of any portion of the extends to be indirect extents as disclosed (Crouse's figs. 6 & 7), into the system of Mutalik for providing a file system for network data servers that is specifically designed to efficiently and reliably control the storage and access of remote files on remote secondary storage system, and can provide for the flexibility to support future developments that will increase the speed and usage of distributed computer network environment (Crouse's col. 4, lines 10-20).

With respect to claim 6, Mutalik teaches a method of storing data files as discussed in claim 5.

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Mutalik does not explicitly indicate, "writing to each data block pointed to by one the indirect extents the direct extent that is replaced by the one indirect extents."

However, Crouse teaches writing to each data block as claimed (col. 11, lines 44-67 and col. 12, lines 1-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Mutalik with the teachings of Crouse. One having ordinary skill in the art would have found it motivated to utilize the use of any portion of the extends to be indirect extents as disclosed (Crouse's figs. 6 & 7), into the system of Mutalik for providing a file system for network data servers that is specifically designed to efficiently and reliably control the storage and access of remote files on remote secondary storage system, and can provide for the flexibility to support future developments that will increase the speed and usage of distributed computer network environment (Crouse's col. 4, lines 10-20).

With respect to claim 13, Mutalik teaches a plurality of data storage device, each operating system including an extent based file system for abstracting file names to physical data blocks in the storage device, wherein each extent includes a field to indicate whether the extent points to a block of extents or a block of data (abstract, col. 5, lines 30-67, col. 6, lines 1-67, col. 7, lines 45-67 and col. 8, lines 1-67; col. 7, lines 10-67 and col. 8, lines 1-28).

Mutalik does not explicitly indicate, "a global cache memory; a plurality of processors coupled to the global cache memory, each processor having a local

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memory for storing an operating system, the devices and processors capable of communicating by posting messages to each other in cache memory.”

However, Crouse teaches memory and processors as claimed (col. 9, lines 47-67, col. 10, lines 1-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Mutalik with the teachings of Crouse. One having ordinary skill in the art would have found it motivated to utilize the use of any portion of the extends to be indirect extents as disclosed (Crouse’s figs. 6 & 7), into the system of Mutalik for providing a file system for network data servers that is specifically designed to efficiently and reliably control the storage and access of remote files on remote secondary storage system, and can provide for the flexibility to support future developments that will increase the speed and usage of distributed computer network environment (Crouse’s col. 4, lines 10-20).

With respect to claims 14 and 16, Mutalik teaches a distributed storage system as discussed in claim 13, and also Mutalik teaches wherein each operating system is adapted to map files to data block (col. 12, lines 12-49).

Mutalik does not explicitly indicate, “assigning an I-node to a file, each I-node capable of storing a plurality of extents; each operating system being a UNIX based system.”

However, Crouse teaches I-node as claimed (col. 11, lines 44-67, col. 12, lines 1-20 and col. 13, lines 42-67); the UNIX as claimed (col. 10, lines 42-67).

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Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Mutalik with the teachings of Crouse. One having ordinary skill in the art would have found it motivated to utilize the use of any portion of the extends to be indirect extents as disclosed (Crouse's figs. 6 & 7), into the system of Mutalik for providing a file system for network data servers that is specifically designed to efficiently and reliably control the storage and access of remote files on remote secondary storage system, and can provide for the flexibility to support future developments that will increase the speed and usage of distributed computer network environment (Crouse's col. 4, lines 10-20).


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Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An Ly whose telephone number is **(571) 272-4039** or via **fax number: (571) 273-4039 (Examiner's fax number)** or e-mail address: **(with your authorization by written statements) anh.ly@uspto.gov**. The examiner can normally be reached on TUESDAY – THURSDAY from 8:30 AM – 3:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene, can be reached on (571) 272-4107 or **Primary Examiner Jean Corrielus (571) 272-4032**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see **<http://pair-direct.uspto.gov>**. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). Any response to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, or faxed to: **Central Fax Center: (571) 273-8300**

ANH LY 
APR. 7th, 2006


JEAN M. CORRIELUS
PRIMARY EXAMINER